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Light-activated power plastic to be incorporated into soldier support systems

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May 6, 2005 Electric power requirements are going up for both soldiers and facilities in theatre of war situations, as the military is using sophisticated electronic technologies for sensing, surveillance, communications, search and destroy, and survival on the battlefield. Today's soldiers are being weighed down, though, by the batteries that drive these devices. They are required to carry a daily supply of primary batteries, but limited power capacity and the continual need for re-supply can limit the mobility, range and mission length required for effective field operations. Since rechargeable batteries can alleviate the soldiers' burden and the extensive logistics support to maintain the battery supply, the US Army now favours their use wherever possible, and recharging those batteries in the field is a priority. Konarka Technologies, a developer of power plastics that convert light to energy, this week signed a US$1.6 million contract with the United States Army to provide light-activated plastic power supply to soldier systems and Army support infrastructure.

To ensure soldiers can become less dependent on supply logistics and locally available power sources to charge batteries, Konarka will deliver its renewable energy generation capabilities to the Army in the devices, systems and structures that are normally deployed for remote operations.

Power goes to the battlefield via equipment and supplies that already have to go into battle, including: • Portable, lightweight AA battery chargers for individual soldiers to enhance the use of handheld electronics • Large-area structures, such as tents that silently produce electrical power for battery charging or direct use. These tents can lessen the amount of diesel fuel needed for generators, reduce noise and emissions, and limit heat signature • Sensor systems, enabling extended unattended operation without regular maintenance to replace battery power

"The battlefield is going digital. Everything from night vision goggles to GPS units to

two-way communicators is powered by batteries, and special operations soldiers can carry 70 to 100 pounds of replacement batteries for their electronics," said Daniel Patrick McGahn, executive vice president and chief marketing officer, Konarka.

"Our power plastic can have a significant impact on reducing the modern Army's logistics load. As we've developed our technology, we've envisioned a broad set of products well suited for military applications, and each one of these applications translates into the commercial sector as well, including mobile phones, PDAs, digital music players, security systems, roofing material and recreation equipment."

As part of this new program, Konarka also will perfect its ability to print camouflage-patterned power plastic to maintain a low visible profile and continue to improve the performance of its photovoltaic fibers and fabrics. Power-generating textiles could be used for soldiers' uniforms, tents, field hospitals, covers for trucks and gun emplacements, and wearable electronics.

"Coloring and patterning is unique to Konarka's technology," said Russell Gaudiana, Ph.D., vice president of research and development, Konarka. "Other photovoltaics require camouflage covers to disguise them, but that reduces light harvesting and power output. Our materials can be printed with the appropriate images while still maintaining their power generating capabilities, helping to protect soldiers in the field."

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